WHAT IS CLAIMED IS:

1. A digital multi-channel demodulator circuit for processing a multi-channel analog RF signal, the multi-channel demodulator comprising:

a frequency-block down-converter configured to receive the analog RF signal and to shift the analog RF signal to a lower frequency band;

an analog-to-digital converter (ADC) configured to receive the analog RF signal from the frequency-block down-converter and to convert the analog RF signal to a multi-channel digital RF signal; and

a digital channel demultiplexer configured to receive the digital RF signal from the ADC and to demultiplex the digital RF signal into separate digital RF channels.

2. The circuit of claim 1 further comprising:

a selector configured to receive the separate digital RF channels and to select one or more separate digital RF channels; and

one or more demodulators configured to receive one or more of the selected digital RF channels from the selector and to demodulate the one or more selected digital RF channels.

3. The circuit of claim 2 wherein each separate digital RF channel comprises one or more data streams to be accessed or used by a subscriber.

4. The circuit of claim 2 wherein the one or more demodulators demodulate only the RF channels that are selected by the selector.

5. The circuit of claim 2 further comprising a digital transport interface configured to receive the selected RF channels from the one or more demodulators and to output the selected RF channels.

6. The circuit of claim 1 further comprising a bandpass filter to reduce aliasing from unwanted signals.

7. The circuit of claim 1 wherein the ADC is a high-speed ADC.

8. The circuit of claim 1 wherein the ADC converts an entire signal band, the signal band including the multi-channel analog RF signal.

9. The circuit of claim 2 wherein the one or more demodulators share resources.

10. The circuit of claim 1 wherein the digital channel demultiplexer includes a digital tuner.

11. The circuit of claim 10 wherein the digital tuner comprises:

a numeric control oscillator (NCO) configured to generate a select frequency, the select frequency being associated with a corresponding RF channel;

a complex multiplier configured to receive the digital RF signal and to multiply the digital RF signal with the select frequency; and

a low-pass filter (LPF) configured to receive the digital RF signal and to pass the corresponding RF channel.

12. The circuit of claim 11 wherein the LPF is a high-speed finite impulse response (FIR) filter.

13. The circuit of claim 1 wherein the digital multi-channel demodulator circuit processes downstream signals in at least one of a satellite system, a terrestrial TV system, and a cable system.

14. A system using the circuit of claim 1 in combination with memory.

15. A system using the circuit of claim 1 in combination with a processor.

16. The circuit of claim 1 wherein the digital channel demultiplexer is a polyphase channel demultiplexer.

17. The circuit of claim 16 wherein the polyphase channel demultiplexer comprises:

one or more low-pass filters (LPF) configured to receive the multi-channel digital RF signal and to synchronize the RF channels;

a discrete Fourier transform circuit (DFT) configured to receive the digital RF signal and to demultiplex the digital RF signal into separate RF channels.

18. The circuit of claim 17 wherein the DFT is a combination of different fast Fourier transforms.

19. The circuit of claim 17 wherein the polyphase channel demultiplexer comprises at least two LPFs, the coefficients of each LPF filter being a part of a bigger low-pass filter.

20. The circuit of claim 17 wherein the LPFs are low-speed finite impulse response (FIR) filters.

21. A digital tuner for use in multi-channel demodulation, the digital tuner comprising:

at least one numeric control oscillator (NCO) configured to generate a select frequency, the select frequency being associated with a corresponding and separate RF channel;

at least one complex multiplier configured to receive a multi-channel digital RF signal and to multiply the multi-channel digital RF signal with the select frequency to obtain the corresponding and separate RF channel.

at least one low-pass filter (LPF) configured to receive the digital RF signal and to pass the corresponding RF channel.

22. The circuit of claim 21 wherein the LPF is a high-speed finite impulse response (FIR) filter.

23. A polyphase channel demultiplexer for use in multi-channel demodulation, the polyphase channel demultiplexer comprising:

a down-sample circuit that samples a multi-channel digital RF signal;

a plurality of low-pass filters (LPFs) configured to receive the multi-channel digital RF signal and to synchronize the RF channels; and

a discrete Fourier transform circuit (DFT) configured to receive the multi-channel digital RF signal and to demultiplex the multi-channel digital RF signal into separate RF channels.

24. The circuit of claim 23 wherein the DFT is a combination of different fast Fourier transforms.

25. The circuit of claim 23 wherein the polyphase channel demultiplexer comprises at least two LPFs, the coefficients of each LPF filter being a part of a bigger low-pass filter.

26. The circuit of claim 23 wherein the LPFs are low-speed finite impulse response (FIR) filters.

27. The circuit of claim 23 wherein the polyphase channel demultiplexer processes downstream signals in at least one of a satellite system, a terrestrial TV system, and a cable system.

28. A method for demultiplexing a digital multi-channel RF signal into a plurality of separate content channels, the method comprising:

down converting the multi-channel analog RF signal to a lower frequency band

converting the multi-channel analog RF signal into a multi-channel digital RF signal; and

demultiplexing the multi-channel digital RF signal into separate digital RF channels.

29. The method of claim 28 further comprising receiving a plurality of multi-channel analog RF signals.

30. The method of claim 28 further comprising selecting one or more selected RF channels from at least one of the digital RF channels, each selected RF channel being an RF channel containing one or more content channels to be accessed or used by a subscriber.

31. The method of claim 30 further comprising demodulating the one or more selected RF channels.

32. The method of claim 31 further comprising demodulating only the one or more selected RF channels.

33. The method of claim 29 wherein the plurality of multi-channel analog RF signals can be from at least one of a satellite system, a terrestrial TV system, and a cable system.

34. The method of claim 28 wherein the demultiplexing further comprises:

providing a plurality of select frequencies, each select frequency being associated with a corresponding and separate RF channel; and

multiplying the at least one multi-channel RF signal with each of the select frequencies to obtain separate RF channels.

35. The method of claim 34 wherein the multiplying is achieved with a complex multiplier.

36. The method of claim 34 further comprising shifting the target RF channel to a baseband.

37. The method of claim 34 further comprising filtering undesired RF channels and passing only the target RF channel.

38. The method of claim 37 wherein the filtering is achieved with a low-pass filter (LPF).

39. The method of claim 38 wherein the LPF is a finite impulse response (FIR) filter.

40. The method of claim 39 wherein the FIR filter is a high-speed filter.

41. The method of claim 34 wherein the select frequencies are generated by numeric control oscillators.

42. The method of claim 28 wherein the demultiplexing further comprises:

synchronizing samples of the multi-channel RF signal using LPFs; and

shifting the frequencies of the RF channels.